UNITED STATES PATENT AND TRADEMARK OFFICE

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09/713,492	11/15/2000	Irwin Jungreis	12116-003001	4724

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EXAMINER
CASCHERA, ANTONIO A

ART UNIT	PAPER NUMBER
2697	

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 07-01)

Office Action Summary	Application No. 09/713,492	Applicant(s) JUNGREIS ET AL.
	Examiner Antonio A. Caschera	Art Unit 2697

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-32_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-32_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _15 November 2000_ is/are: a)☐ accepted or b)☒ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

    If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

       1.☐ Certified copies of the priority documents have been received.

       2.☐ Certified copies of the priority documents have been received in Application No. _____ .

       3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

    a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _3_ .

4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Specification

1.   The disclosure is objected to because of the following informalities:

   a.   The term, "step propagator 42", should be replaced with, "step executor 42" (see page 8, lines 19 & 25) to match Figure 1.

   b.   The term, "FIG 6C shows...," should be replaced with, "FIG 5C shows...," as there is no Figure 6C within the drawings of this application (see page 21, line 8).

Appropriate correction is required.

Drawings

2.   The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description:

   a.   The referenced element 144 is not found in Figure 4 (see page 19, line 19).

   b.   The referenced elements 162, 164, and 166 are not found in Figures 5A-5D (see the 1st paragraph of page 21).

   c.   The referenced element 203 is not found in Figure 6 (see page 23, lines 4-5).

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

3.   Claim 1 is objected to because of the following informalities:

a.   The phrase, "...to change at one or more elements to produce," is not proper

English and should be replaced with, "...to change at least one or more elements to

produce," (see line 8 of claim 1).

Appropriate correction is required.

4.   Claim 4 is objected to because of the following informalities:

b.   The phrase, "...some of the steps and the before executing," is not proper English

and should be replaced with, "...some of the steps before executing," (see lines 1-2 of

claim 4).

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

5.   Claims 1-3, 6-14, 16-21, 23, 24, 26, 27 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Hatanaka (U.S. Patent 5,923,573).

In reference to claims 1 and 18, Hatanaka discloses modifying a "kit model" of a three-

dimensional CAD system having elements such as points, curved lines and curved surfaces (see

column 2, lines 7-18). Hatanaka also discloses identifying a change in an element by receiving

modification information for moving or changing an element (see column 2, lines 30-32).

Hatanaka discloses creating generation relationship data providing the model regeneration

function with information as to how geometric shapes of the elements are to be generated (see columns 7-8, lines 66-6) which the office believes to be substantially equivalent, if not the same as the applicant's "first step" creation. Hatanaka also discloses when points, curved lines and curved surfaces of the model are moved or changed, other graphic elements which relate to the changed element are also modified (see column 7, lines 28-52). Note that the office believes that in using such related elements as in Hatanaka, it would have been obvious to one of ordinary skill in the art at the time the invention was made to change one or more elements to produce a model that accurately reflected the change to a first element because related modified elements would cause other related elements to also be changed. Hatanaka does not explicitly disclose creating a, "second step" based on the first step and the structure of one of the elements or the relationship between two of the elements however, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement a second step creation in the three dimensional modeling apparatus of Hatanaka in order to provide for other related elements to be modified which are based on the modification from the first created step and because since the same basic functions as claimed is shown by Hatanaka, it is substantially a matter of designating this as a separate step.

In reference to claims 2 and 19, Hatanaka discloses all of the claim limitations as applied to claim 1 above. Hatanaka discloses modifying a "kit model" of a three-dimensional CAD system having elements such as points, curved lines and curved surfaces (see column 2, lines 7-18).

In reference to claim 3, Hatanaka discloses all of the claim limitations as applied to claim 2 above however Hatanaka does not explicitly disclose the kit models being of an architectural

structure however it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the three dimensional CAD system with many types of models including architectural models as this is a standard use for a CAD system.

In reference to claim 6, Hatanaka discloses all of the claim limitations as applied to claim 1 above. Although Hatanaka discloses the generation relationship data to be included in an element's data structure (see column 7, lines 57-61), Hatanaka does not explicitly disclose it being stored in a repository. It would have been obvious to one of ordinary skill in the art at the time the invention was made to store the steps in a sort of memory or repository in order to repeat execution of the steps at a later time.

In reference to claim 7, Hatanaka discloses all of the claim limitations as applied to claim 1 above. Hatanaka does not explicitly disclose one of the steps of claim 1 being a nul step however, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement a nul step within the three dimensional modeling apparatus of Hatanaka in order to provide the user with the option of canceling a step in which execution of a cancellation step does not affect the model. Note such a feature is commonly found in much of today's software in the form of dialogue boxes.

In reference to claim 8, Hatanaka discloses all of the claim limitations as applied to claim 7 above. Although, Hatanaka does disclose regeneration of an object after an element is modified (see column 8, lines 62-65), Hatanaka does not explicitly disclose a nul step instigating regeneration. It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement a nul step instigating regeneration within the three dimensional modeling apparatus of Hatanaka in order to rebuild the view of a model if the user

canceled a step of modification so that the previously unmodified element maybe seen again. Note such a feature is commonly found in much of today's software in the form of an "undo" command.

In reference to claims 9 and 17, Hatanaka discloses all of the claim limitations as applied to claim 1 above in addition, Hatanaka discloses each element having geometric shape data for specifying graphic elements (see column 7, lines 57-65). Note the office believes the applicant's atom feature to be substantially the same as the geometric shape data found in the prior art of Hatanaka. Hatanaka also discloses geometric shape data expressing a dependency between generation relationship data when geometric shape data is re-calculated by using information of the generation relationship data (see column 8, lines 6-8). Hatanaka does not explicitly disclose marking changes made to an element however it would have been obvious to one of ordinary skill in the art at the time the invention was made to mark changes made to an element by saving them as new geometric shape data in order to perform further modifications based upon prior modifications.

In reference to claim 10, Hatanaka discloses all of the claim limitations as applied to claim 1 above. Hatanaka discloses when points, curved lines and curved surfaces of the model are moved or changed, other graphic elements which relate to the changed element are also modified (see column 7, lines 28-52). Note that the office interprets these other graphic elements, which are related to the modified element, to represent a class of elements.

In reference to claim 11, Hatanaka discloses all of the claim limitations as applied to claim 1 above in addition, Hatanaka discloses executing a geometry step on a structure by offsetting particular points of the structure (see Figure 16) using an F node which is associated to

geometric relationship data (see column 13, lines 13-15 and column 8, lines 13-16). Note that

the office believes the creation of geometric relationship data to be similar in functionality as the

applicant's "first step" creation.

In reference to claims 12 and 24, Hatanaka discloses all of the claim limitations as

applied to claims 1 and 18, respectively above in addition, Hatanaka discloses geometric

relationship data for each element containing an F node which includes a lock flag indicating

whether or not the relationship data is locked (see column 8, lines 17-20). Note that Hatanaka

does not explicitly disclose that a locked F node prevents execution however it is well known in

the art that locked data is inaccessible thus disallowing the execution of code utilizing the data.

In reference to claim 13, Hatanaka discloses all of the claim limitations as applied to

claim 1 above, however Hatanaka does not explicitly disclose generating an error signal if the

first step or second step cannot be sorted. It would have been obvious to one of ordinary skill in

the art at the time the invention was made to generate an error signal to inform the modeling

system and the user of the modeling system that due to unsorted steps, elements found in the

model may not be generated correctly in orientation, dimension or position.

In reference to claim 14, Hatanaka discloses modifying a "kit model" of a three-

dimensional CAD system having elements such as points, curved lines and curved surfaces (see

column 2, lines 7-18). Hatanaka discloses a kit model modification routine receiving element

modification information and checking all elements that are effected by a modification to the

element by observing a "Used list," (see column 9, lines 13-17 and 34-40). Hatanaka also

discloses executing the modification of the element through the use of a model regeneration

function (see column 7, lines 28-32). Note the office interprets the kit model modification

routine of Hatanaka as applicant's step propagator and the model regeneration function as applicant's step executor. Also, although Hatanaka does not explicitly disclose creating a second step based on the first step and the structure of one of the elements or the relationship between two of the elements, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement a second step creation in the three dimensional modeling apparatus of Hatanaka in order to provide for other related elements to be modified which are based on the modification from the first created step.

In reference to claim 16, Hatanaka discloses all of the claim limitations as applied to claim 14 above in addition, Hatanaka discloses a data area storing a model consisting of elements, curved lines, data points and curved surfaces (see column 3, lines 20-24). Note the office interprets the applicant's element table to be found within a data area such as disclosed by Hatanaka.

In reference to claim 20, Hatanaka discloses all of the claim limitations as applied to claim 18 above. Hatanaka also discloses when points, curved lines and curved surfaces of the model are moved or changed, other graphic elements which relate to the changed element are also modified (see column 7, lines 28-52). Hatanaka does not explicitly disclose creating a, "second step" effecting changes to the same element or based on the first step however, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement a second step creation in the three dimensional modeling apparatus of Hatanaka which is based on the first step in order to provide for other related elements to be modified which are based on the modification from the first created step and because since the same basic functions as claimed is shown by Hatanaka, it is substantially a matter of designating this as a

separate step. It also would have been obvious to one of ordinary skill in the art at the time the invention was made to implement a "second step" on the same element as a first step was preformed upon in order to apply further modifications to an element of a design which is a standard function performed in a CAD system.

In reference to claim 21, Hatanaka discloses all of the claim limitations as applied to claim 20 above. Hatanaka does not explicitly disclose creating a, "second step" selected from a plurality of steps based on the creation of other steps however, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement such a second step creation in the three dimensional modeling apparatus of Hatanaka in order to provide a continuing modification of elements based upon a plurality of prior changes performed by the creation of previously generated steps which is a standard function performed in a CAD system.

In reference to claim 23, Hatanaka discloses all of the claim limitations as applied to claim 18 above. Hatanaka does not explicitly disclose a nul step whose execution does not affect the model however, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement a nul step within the three dimensional modeling apparatus of Hatanaka in order to provide the user with the option of canceling a step in which execution of a cancellation step does not affect the model. Note such a feature is commonly found in much of today's software in the form of dialogue boxes.

In reference to claim 26, Hatanaka discloses all of the claim limitations as applied to claim 18 above, in addition, Hatanaka discloses a plurality of functions contained in a table of the generation relationship data where a modifying function is chosen to be executed (see column 8, lines 8-12 and column 9, lines 57-67).

In reference to claim 27, Hatanaka discloses all of the claim limitations as applied to claim 18 above, in addition, Hatanaka discloses executing modifying functions contained in the generation relationship data (see column 9, lines 57-67) however he does not explicitly disclose executing the steps of the first element before moving onto the next. It would have been obvious to one of ordinary skill in the art at the time the invention was made to execute the all steps of one element before moving onto the next element in such an associative modeling system of Hatanaka in order to finish processing on an element that the next element for processing might be associated with thus allowing for all changes made in the first element to be properly carried over to the next element.

6.   Claims 4, 5, 15, 22, 28, 30 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatanaka (U.S. Patent 5,923,573) in view of Ardoin et al. (U.S. Patent 5,692,184).

In reference to claims 4, 15, 22 and 28 Hatanaka discloses all of the claim limitations as applied to claims 1, 14 and 18, respectively, however Hatanaka does not explicitly disclose sorting the steps before execution. Ardoin et al. discloses an object relational management system for use in CAD software, where functions of nodes are ordered according to numeric values equivalent to comparator operators (see column 1, lines 28-31, column 8, lines 34-43 and Figure 16). It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the sorting of elemental functions of Ardoin et al. with the modeling system of Hatanaka in order to compute functions of an element in the correct order because changing relationships could cause a change in order of functions (see column 8, lines 54-59 of Ardoin et al.).

In reference to claim 5, Hatanaka and Ardoin et al. disclose all of the claim limitations as applied to claim 4 above in addition, Ardoin et al. discloses the sorting of nodes in such a manner that a parent is evaluated before the child node (see column 8, lines 36-43). Note although Ardoin et al. does not explicitly disclose the use of a depth-first search sorting algorithm the office believes such a sort, disclose by Ardoin et al., to be equivalent in functionality.

In reference to claims 30 and 32, Hatanaka discloses modifying a "kit model" of a three-dimensional CAD system having elements such as points, curved lines and curved surfaces (see column 2, lines 7-18). Hatanaka also discloses identifying a change in an element by receiving modification information for moving or changing an element (see column 2, lines 30-32). Hatanaka discloses creating generation relationship data providing the model regeneration function with information as to how geometric shapes of the elements are to be generated (see columns 7-8, lines 66-6) which the office believes to be similar in functionality as the applicant's "first step" creation. Hatanaka also discloses when points, curved lines and curved surfaces of the model are moved or changed, other graphic elements which relate to the changed element are also modified (see column 7, lines 28-32). Note that the office believes that in using such related elements as in Hatanaka, it would have been obvious to one of ordinary skill in the art at the time the invention was made to change one or more elements to produce a model that accurately reflected the change to a first element because related modified elements would cause other related elements to be changed also. Hatanaka discloses executing modifying functions contained in the generation relationship data (see column 9, lines 57-67). Hatanaka does not explicitly disclose creating a second step based on the first step and the structure of one of the elements or the relationship between two of the elements however, it would have been obvious to

one of ordinary skill in the art at the time the invention was made to implement a second step

creation in the three dimensional modeling apparatus of Hatanaka in order to provide for other

related elements to be modified which are based on the modification from the first created step.

Hatanaka does not explicitly disclose sorting the steps before execution. Ardoin et al. discloses

an object relational management system for use in CAD software, where functions of nodes are

ordered according to numeric values equivalent to comparator operators (see column 1, lines 28-

31, column 8, lines 34-43 and Figure 16). Neither Hatanaka nor Ardoin et al. disclose sorting the

steps to eliminate interference among steps however, it would have been obvious to one of

ordinary skill in the art at the time the invention was made to implement the sorting of elemental

functions of Ardoin et al. with the modeling system of Hatanaka in order to compute functions of

an element in the correct order because changing relationships could cause a change in order of

functions thus sorted steps would eliminate the possibility of these changing relationships

interfering (see column 8, lines 54-59 of Ardoin et al.).

7.   Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hatanaka (U.S.

Patent 5,923,573) in view of Pabon (U.S. Patent 5,251,290).

In reference to claim 29, Hatanaka discloses all of the claim limitations as applied to

claim 18, however Hatanaka does not explicitly disclose verifying the elements after execution

for constraint satisfaction. Pabon discloses a method for geometric modeling where geometric

modeling constraints are satisfied (see lines 1-23 of abstract). Although Pabon does not

explicitly disclose satisfying constraints for element data it would have been obvious to one of

ordinary skill in the art at the time the invention was made to implement verifying constraint data

after execution of steps in order to confirm that the elements are in the correct positions, orientations, and dimensions (see column 1, lines 19-22 of Pabon).

8.   Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hatanaka (U.S. Patent 5,923,573) in view of Hollingsworth et al. (U.S. Patent 5,444,836).

In reference to claim 25, Hatanaka discloses all of the claim limitations as applied to claim 18 above. Hatanaka does not explicitly disclose generating the plurality of steps by prediction however Hollingsworth et al. does. Hollingsworth et al. discloses methods for creating and applying flexible user defined rules for placement of graphical objects in a CAD system (see lines 1-3 of abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the generation of modification steps of Hatanaka with the rule based CAD system of Hollingsworth et al. in order to allow the CAD system to automatically and correctly place the desired graphical objects into desired locations without human intervention (see column 3, lines 30-34 of Hollingsworth et al.).

9.   Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hatanaka (U.S. Patent 5,923,573) and Hollingsworth et al. (U.S. Patent 5,444,836) in view of Pabon (U.S. Patent 5,251,290).

In reference to claim 31, Hatanaka discloses a method of propagating changes made in one data element to other related elements (see column 7, lines 28-52). Hatanaka discloses the data structure of elements to include generation relationship data which retains information as to with which and how the geometric shape of elements are generated (see columns 7-8, lines 66-8). Note the office believes the data structure of Hatanaka provides a method for accumulating changes in an element. Hatanaka also discloses using a data network identifying possible sets of

changes that may be made to related elements (see column 8, lines 57-67). Hatanaka does not

explicitly disclose selecting the most appropriate set of changes by employing some

predetermined standard however Hollingsworth et al. does. Hollingsworth et al. discloses

methods for creating and applying flexible user defined rules for placement of graphical objects

in a CAD system (see lines 1-3 of abstract). Hollingsworth et al. also discloses a method of

selecting rules to apply changes to a model, by determining if the rules pass or fail an

overplotting criteria wherein two objects are tested to see if they overplot one another (see

column 10, lines 26-30). It would have been obvious to one of ordinary skill in the art at the

time the invention was made to implement the generation of modification steps of Hatanaka with

the rule based CAD system of Hollingsworth et al. in order to allow the CAD system to

automatically and correctly place the desired graphical objects into desired locations without

human intervention (see column 3, lines 30-34 of Hollingsworth et al.).

Conclusion

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Antonio Caschera whose telephone number is (703) 305-1391.

The examiner can normally be reached Monday-Thursday and alternate Fridays between 7:00

AM and 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Joseph Mancuso, can be reached at (703)-305-3885.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive,

Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding

should be directed to the Technology Center 2600 Customer Service Office whose telephone

number is (703) 306-0377.

aac

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